

Project Design Phase-I

Solution Architecture

Date	18 ^h October 2023
Team ID	EXT2023TMID593074
Project Name	Arming against violence – YOLO weapon detection
Maximum marks	4 Marks

In order to revolutionize real-time weapon identification, our system combines the strength of the YOLO (You Only Look Once) and CNN (Convolutional Neural Network) technologies. By implementing this integrated system, we increase the environment's overall safety and security while also improving the accuracy of threat identification. This system does not simply look for weapons; it also makes sure that possible threats are dealt with quickly, minimizing damage and saving lives. The YOLO-CNN framework is built to be adaptable to remain ahead of changing security concerns and to operate with unwavering accuracy.

For real-time threat detection, our design uses YOLO, and CNN adds extra verification and analysis. The following essential parts make up the system:

1. **Camera Network:** Live video feeds are captured by security cameras at various locations.
2. **Real-Time Threat Detection:** YOLO analyses video frames to look for possible weapons.
3. **CNN verification:** The CNN model examines and validates the discovered objects further.
4. **Notification Service:** Both the web app and the mobile app receive instant messages and notifications.
5. **User Interface:** Both the web app and the mobile app offer user-friendly interfaces for logging into the system and getting prompt alerts about risks that have been identified.

6. Emergency Services Integration: Users can initiate an emergency services request immediately from the web app and mobile app when a confirmed weapon threat occurs. This capability guarantees a prompt reaction from law enforcement, first responders, or other pertinent authorities to properly resolve security events.

With real-time threat detection and prompt notifications offered through online and mobile apps, this design ensures that the system responds to changing security needs. By combining the strengths of CNN and YOLO, it represents a paradigm leap in security technology and dramatically improves public safety and security.

Solution Architecture Diagram

